A Survey of ICT Access and Usage in Ethiopia: Policy Implications

Executive Summary

This policy brief presents a synthesis of the results of household survey on ICT access and usage that was conducted in Ethiopia and other 16 African countries at the end of 2007 and the beginning of 2008. The data were collected from a national sample of 2100 households. The survey covered 84 Enumeration Areas (EA) that were randomly selected based on the data available from the Central Statistics Agency. Major urban, urban and rural areas from Tigray, Amhara, SNNPR, Somali, Afar, Benshangul Gumuz, Oromiya, Hareri, Dire Dawa and Addis Ababa regions were covered to provide an overall picture of the state of ICT access and usage in the country. The paper synthesises the results of the ICT access and usage survey in comparison to other African countries and provides policy recommendations for actions.

1. Introduction

The Government of Ethiopia has made a significant progress in increasing access to the ICT in the recent years. The fixed line penetration has reached 1.2% with mobile penetration well above 3% in 2008. Progress was also made in the rural access front, particularly in connecting rural towns that did not have access to modern information and communication technologies. The incumbent's (Ethiopian Telecommunications Corporation) stations were expanded to 936 places mostly in rural towns. About 7400 out of 15,000 villages were connected to modern communication services. ETC has also rolled out 4000 Kms of fiber backbone in five directions from the capital. The fiber network is expected to expand the vital connectivity to rural areas while also improving the quality of domestic and international links.

Nonetheless, Ethiopia is starting the development of its communications sector from a lower base and it still lags very much behind other countries in the region in almost all ICT indices. The state of ICT access and usage mirrors both its social and economic development and a vertically integrated monopoly market structure.

2. Access & Usage

The ICT access and usage survey indicates that the penetration of fixed line has improved considerably at the household levels. Ethiopia scores favourably well behind South Africa, Namibia and Botswana as shown in Figure 1. The fixed line penetration at the household levels was 7.6%, which reflects the improvement in fixed line penetration nationwide in the recent years following large scale government investment in communications infrastructure. Besides, there is a tendency of sharing fixed phones by households that dwell in the same compounds; that has inflated the figure slightly. Notwithstanding the relatively high level of penetration, there is still a long way to go in bridging the access gap to fixed line network in the country, in particular in rural areas.

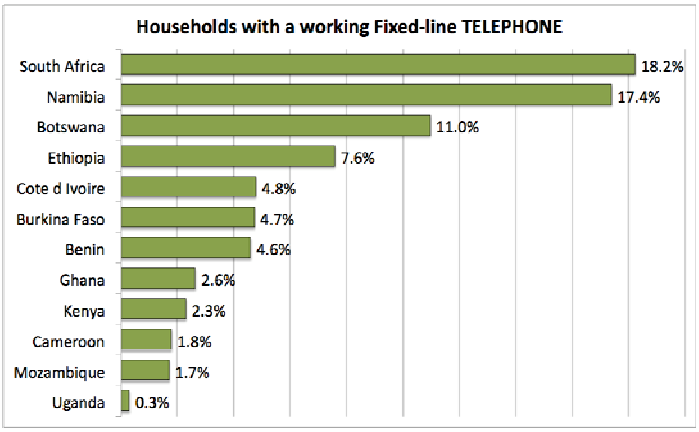


Figure 1: Households with working fixed-line telephones in the survey

Ethiopia has not introduced pre-paid service to its fixed line network. Figure 2 shows that in Uganda over 95.8% of fixed line subscribers are pre-paid. In Ethiopia, the incumbent operator requires its customers to visit designated stations to pay for monthly bills for fixed line, Internet and contract (post-paid) cellular phones and penalizes those who fail to settle their bills in the specified time of four days by disconnecting them from the service and putting a levy of US$2.2 reconnection charges. The introduction of pre-paid service for fixed line could eliminate such a cumbersome billing arrangement and have a potential of reducing customer complaints about over billing and delayed collection of revenues.

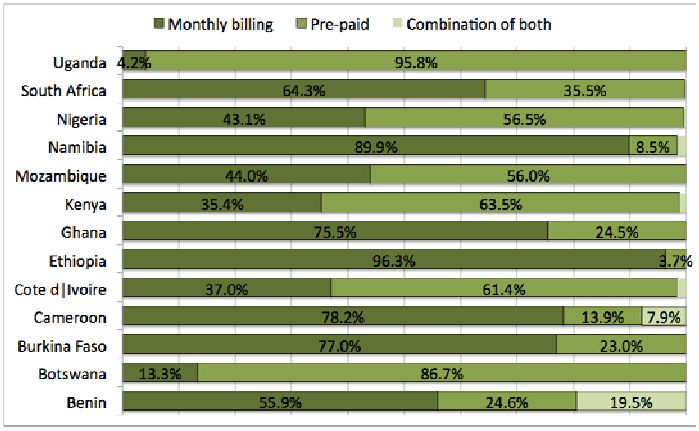


Figure 2: Mode of fixed line billing

3. Mobile and Public Networks

Mobile penetration in Ethiopia is very low when compared to the other African countries. Figure 3 demonstrates that only 3.2% of the households have access to active SIM cards. This is in sharp contrast to Botswana, Ghana and South Africa where about 60% of the households have access to active SIM cards. The public monopoly of mobile services is the key factor for Ethiopia's failure to capitalize on the global mobile sector boom and the resulting very low level of mobile penetration and substandard quality of service in the region, if not globally. There has been a shortage of SIM cards in the country at the time of the survey, something unheard of in other countries over the last five years. Many subscribers are still on the waiting list and long queues for getting mobile services are quite the norm.

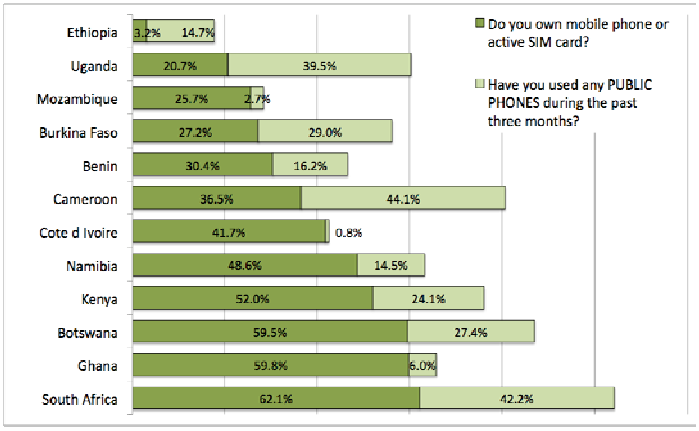


Figure 2: Percentage of participants who own mobile phones or active SIM cards as well as those who have used public phones in the recent past

The usage of public phones is relatively higher in Ethiopia (14.7%) compared to Mozambique (2.7%), Cote d'Ivoire (0.8%), Ghana (6%) and Namibia (14.5%) as shown in Figure 4. There were 4718 payphones in the country at the time of the survey, and access to these is limited to major towns. The vast majority of communications users rely on privately operated telephone kiosks scattered throughout the country that provide 90% of public communication services. Kiosks were historically discouraged but remained the major outlets for communication services in areas with network coverage.

The survey found out that increased public phone usage by those who own SIM cards and fixed line due to lower cost of making calls via public phones. Figure 4 shows that mobile customers in Benin Cameroon, Ethiopia, Namibia and Uganda tend to use public phones the most compared to other countries. In the case of Ethiopia, this reflects the low social and economic development that translates to lower purchasing power of the population and the high tendency to supplement mobile calls with public phones when the customers are in short of money to buy the "air time". In such a situation, mobile phones are used for "buzzing", while public phones are preferred for making social and business calls.

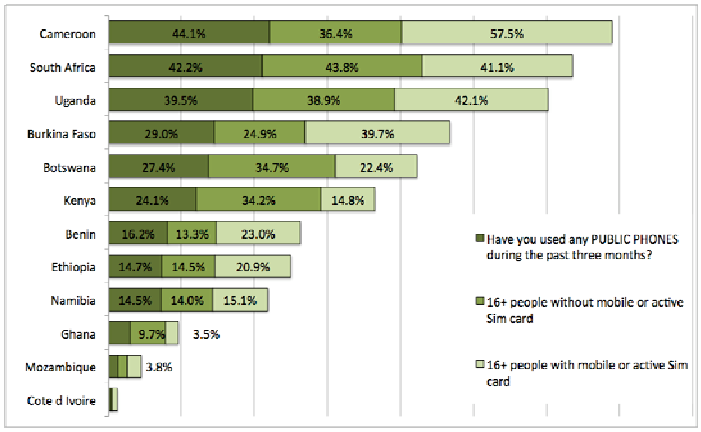


Figure 4: Public Phone Usage

The survey confirmed that the "pre-paid" is the main mode of payment for mobile services in all African counties. In Ghana, for example, 99.8% of the mobile users are "prepaid". Ethiopia has a relatively high figure (11.5%) of contract (post-paid) subscribers due to historical reasons. The incumbent began with contract phones in 1999 and started phasing it out in 2003, when it introduced "pre-paid" services. The presence of international and regional institutions that favour post-paid services for their staff was another factor for the retention of a relatively high proportion of "post-paid" customers.

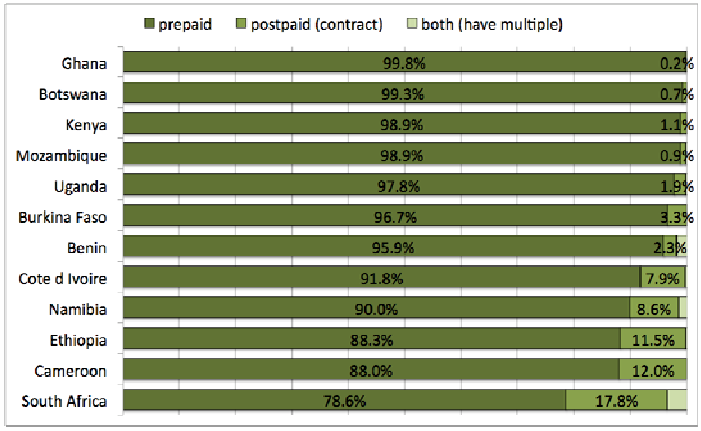


Figure 5: Payments methods for mobile phone services across survey countries

The monopoly of cellular services and shortage of SIM cards has have been working against multiple SIM card ownership in Ethiopia. Multiple SIM card ownership is a phenomenon in countries with two or more operators. Benin has three mobile network operators and 36% of the customers own more than one SIM cards. Figure 6 indicates that only 0.6% those surveyed in Ethiopia said that they have multiple SIM Cards.

This is mainly due to "hoarding" of SIM cards form same operator to conduct different businesses – social or commercial/business calls.

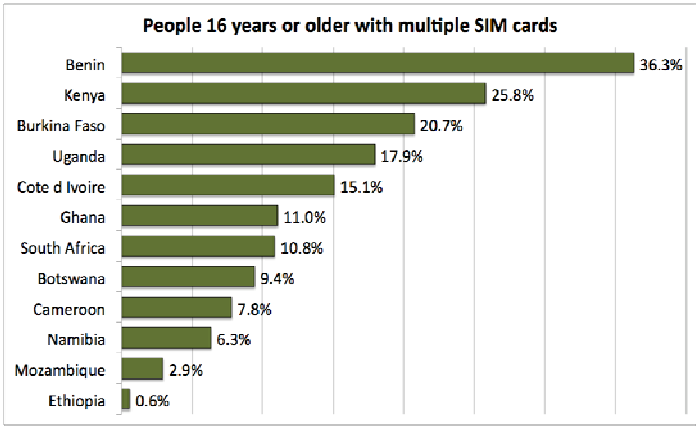


Figure 6: Percentage of people 16 years or older and own more than one SIM card

4. Internet

Ethiopia ranks at the bottom of the table in terms of Internet connection and access to computers at the household levels, as illustrated in Figure 7. Only 0.06% of those surveyed indicated that they have working Internet connection and 0.22% said they have access to desktop or notebook computers.

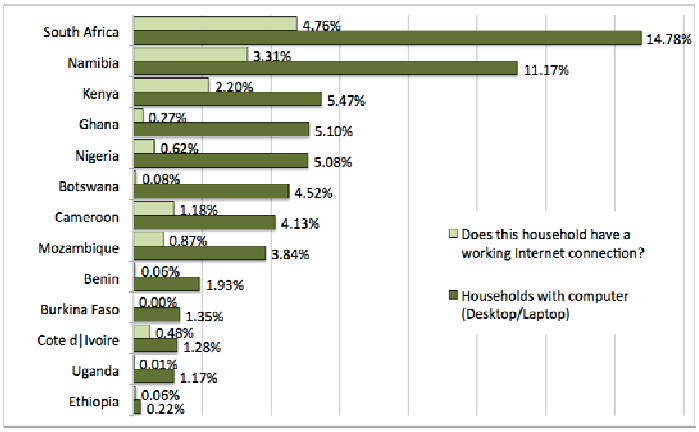


Figure 3: Households with access to computers and internet connections

The low penetration of the Internet in the country was further established by limited awareness and usage of the net. Although the level of awareness of the importance of the Internet is slightly higher than that of Uganda and Mozambique, Internet usage in Ethiopia remained the lowest in Africa. Figure 8 indicates that Internet usage was around 0.7%. This translates to a user base of about 553,000 in the country. Ethiopia has a long way to go to meet the regional average of Internet usage of 5% (i.e. raise its user base from 553,000 to around 4, 000,000).

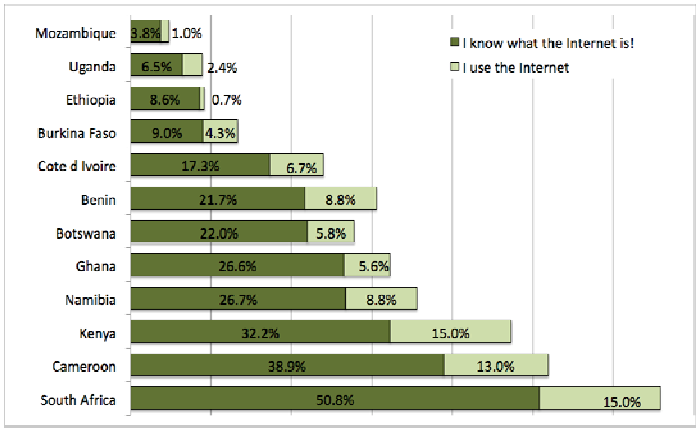


Figure 4: People's awareness of the Internet and its use in various countries

There were 25,724 Internet subscribers at the time of the survey. Thus the ratio of Internet subscribers to users is about 1:20 an indication of the fact that the majority of users rely on cyber cafés or Internet access at schools or work places. Sixty percent of those surveyed indicated that they access the Internet at Cyber Cafés and about a half of that (26%) have access at educational institutions such as schools, universities and private colleges. Figure 9 demonstrates that the pattern of Internet usage in Ethiopia is somewhat similar to that of Kenya and South Africa where cyber Cafés dominate most of the public access to the Internet followed by access at work place and educational institutions. The very low ownership of computers and limited income of the population means Internet access at home is very limited in Ethiopia.

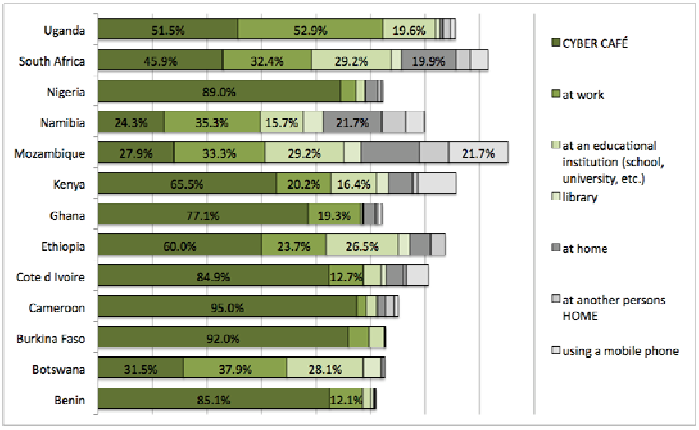


Figure 9: Various locations through which people access the Internet

To improve the state of the Internet, the government needs to liberalize the Internet market to increase choices and access to high quality services, enhance access at schools and work places and facilitate unlimited access to broadband networks and international gateways and promote the interconnection between service providers.

5. Expenditure

Ethiopia is one of the poorest countries in Africa with GDP per capita of about $130 and GDP in PPP around $900. The high incidence of poverty and the rising cost of living have had a direct impact on the consumer spending on communication services. The average monthly expenditure on fixed

line communication is $4.30, the lowest in the region. Figure 10 shows fixed line expenditure is about 5 times less than that in neighboring Kenya.

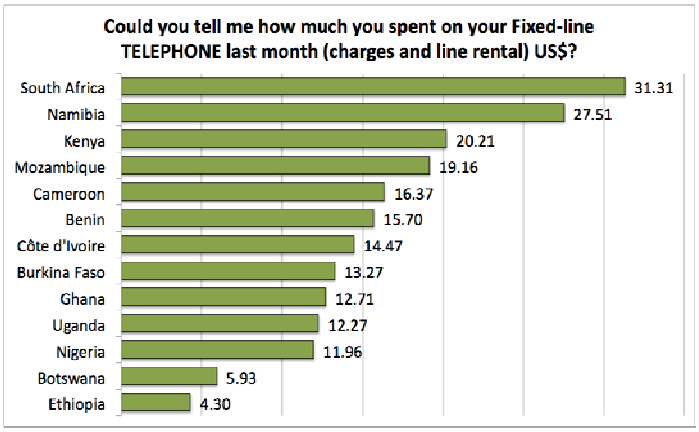


Figure 10: Respondent expenditure on fixed-line phones for previous month

Similarly, the expenditure on mobile calls is the lowest in Ethiopia compared to other countries. This again mirrors the low economic development and Human Development Index. The incumbent operator (ETC) earned about $95 million from mobile services in 2007. This translates to an Average Revenue Per User (ARPU) of US$6.5 - a very low figure compared to neighboring countries like Kenya and Uganda where ARPU lingers around US$12. The ARPU has been declining ever since as mobile phones beginning to reach the bottom pyramid. Figure 11 shows that the mobile expenditure in Ethiopia was $3.81 four times lower than that South Africa.

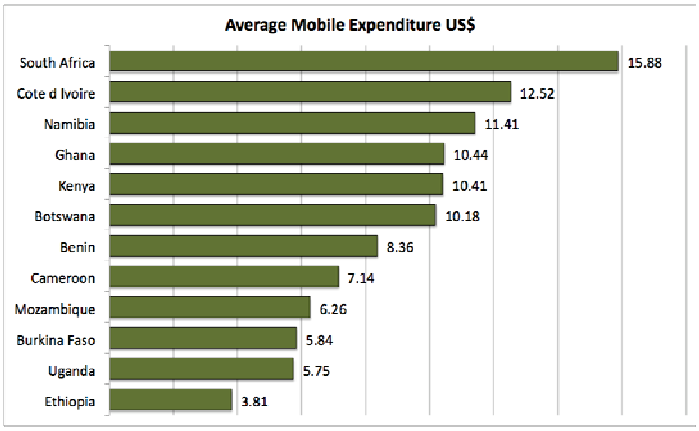


Figure 11: Respondent expenditure on mobile phones for previous month

The average public phone expenditure shows a similar trend. The ability to pay, tariffs and accessibility of public phones are the main factors that influence public phone expenditure. The average expenditure on public phone is 0.5 birr (50 cents); that translates to a one time three minutes call.

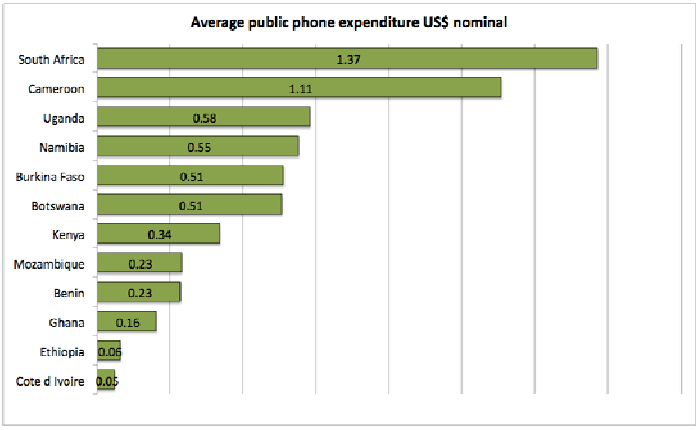


Figure 5: Respondent expenditure on public phones for previous month

6. Price Elasticity

One of the measures of the ICT access and usage survey was what will happen to the communication patterns, if call rates were to come down, in particular whether communication users would be willing to make more calls or just save the resulting money for other purposes. A third of those surveyed in Ethiopia (31.2%) indicated that they would make the same calls and use the saved money for other purposes, if given the choice. The willingness to use the savings to make more calls is the lowest in Ethiopia compared to other countries, except for Mozambique where 62.8% indicated that they would use the savings to make further calls.

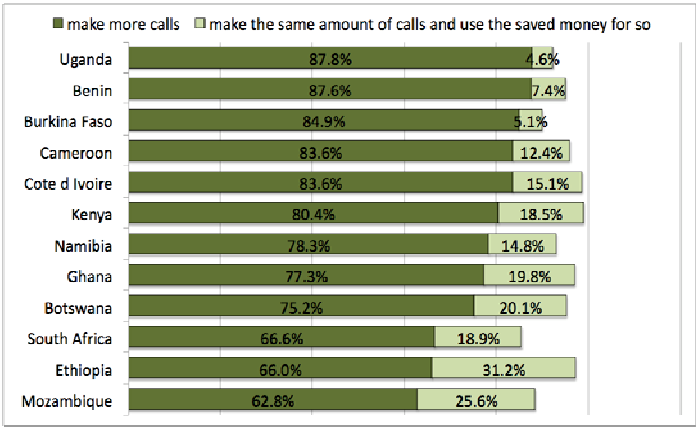


Figure 13: Respondents' willingness to use money saved by cheaper rates for more calls

Figure 13 demonstrates that the proportion of those who indicated that they use the saved money for something else is the largest in Ethiopia compared to other countries, an indication of the level of poverty and hardship that communication users are facing and the importance of downward revision of tariffs. Two third of those who surveyed indicated that they would make more calls. A downward revision of tariffs would improve the revenue base of the incumbent while increasing the livelihood of the poor who would otherwise divert the saving to spend on special needs.

7. Untapped Market Potential

Despite recent improvements and success in providing ICT services, there is still potential demand for both fixed-line and mobile phone communications as evidenced the willingness to pay for these services. In effect, there is a substantial level of willingness to pay for communication services in Ethiopia compared to communication users in countries like Ghana, Uganda, Mozambique and Namibia. This demonstrates both the scarcity of communication services and users willingness to pay for communications services regardless the level of poverty. The waiting list for main lines is substantial in Ethiopia. It was estimated that around 100,000 at the beginning of 2008. About 10% of the population (8,000,000) is potentially on the waiting list for accessing to mobile services.

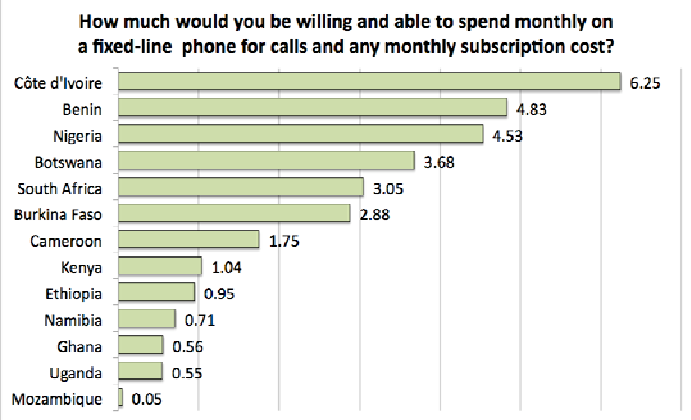


Figure 6: Potential monthly expenditure on fixed-line services in various countries in US$

The survey found that current mobile pricing in Ethiopia does not reflect the expectation and economic hardship facing users and the amount they are willing to pay for cellular services. On the average mobile users indicated that they are willing to spend about US$0.6 (Birr 6) on mobile communication. This is four times less than the current airtime window of Birr 25 (US$2.5) per month.

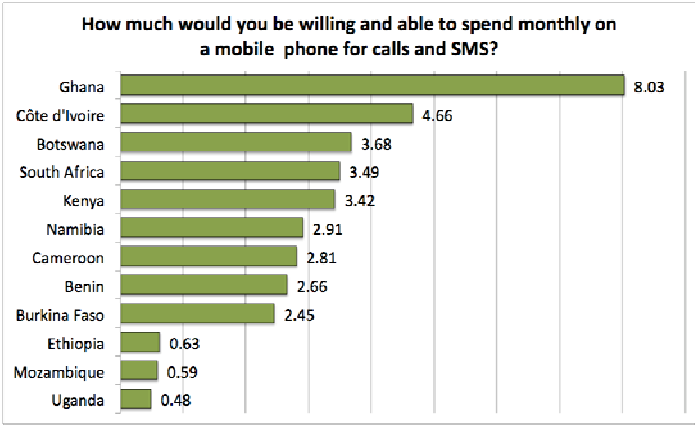


Figure 7: Potential monthly expenditure on mobile phone services in various countries

The findings suggests the importance of the introduction of small air time fees for example about 1$ (birr 10) air time cards and removal of the restriction on monthly air time window.

The amount that mobile users in Ethiopia are willing to pay for mobile handsets is the lowest in the region, except for those in Uganda and Mozambique. Figure 16 indicates that Ethiopian mobile users are willing to pay about $2.36 for mobile handsets. They think that the average handsets cost is around $21 dollars. This corresponds well with used handsets; the lowest price of new mobile handset in Addis Ababa is about $30.

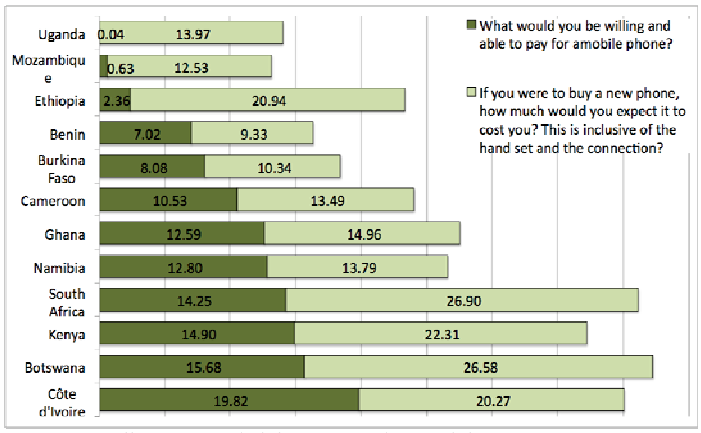
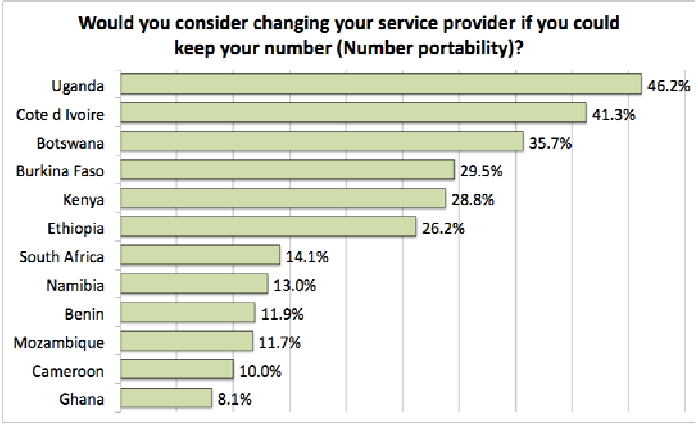


Figure 8: Willingness and ability to spend on mobile services in survey countries

Presumably, the lower the price of the mobile handsets, the higher use of cellular services.

8. Number Portability

With only a single operator, number portability does not seem to feature as major concern in Ethiopia. However, the survey shows the underlying drive for number portability in most counties – i.e. dissatisfaction with the quality of services. Over a quarter (26%) of the mobile customers are willing to change the service provider, if they are allowed to do so or able to keep their numbers. This reflects users' dissatisfaction with the current services provided by the ETC. The incumbent's focus on rolling out massive infrastructure (fixed, mobile, rural access and fiber backbone) was matched by declining quality of service in the recent years. A failure of a billing system in 2006 did not only cost the incumbent hundreds of thousands dollars, but also led to over billing and rising consumer complaints. The quality of mobile network is the lowest in the world with sudden drop of line during communications, low level of call completion.



The government has committed to address the access challenges and has entered into vendor financing arrangement with a Chinese company (ZTE) to meet the following targets by 2010:

- Increase mobile subscription from the current 1.63 million subscribers to 10 million subscribers
- Rollout 10,000 km fiber
- Install 50,000 public pay phones
- Build NGN core network with 2.4 million capacity
- Build access network with a capacity of 1.2 million to support fixed and wireless users
- Provide universal access to communications to 40% of the population within a distances of 5 Kms
- Increase the number of Internet subscribers to 150,000
- Provide access to 15,000 rural villages

However, these were not matched by quality of service targets. Experience shows that the incumbent will continue to provide substandard services unless the government "bites a bullet" to introduce competition in the communications sector.

9. Conclusions

The following conclusions can be drawn from the survey:

- There has been substantial improvement in the penetration of fixed lines at the household levels due to a growing investment in communications infrastructure in recent years. However, the government should not remain complacent about access to communication services in rural and underserved areas.
- Household mobile penetration in Ethiopia is one of the lowest in Africa and about 20 times behind leading countries such as Ghana, Botswana and South Africa. This was exacerbated by substandard quality of service. The monopoly market structure is responsible for the inadequate mobile services and shortage of SIM cards.
- Usage of public phone is very high in Ethiopia. Fixed and mobile phone users tend to rely on public phones for economic reasons. Mobile phones are used for receiving calls and send "buzzing" signal particularly by those at the bottom of the pyramid, while public phones are used for business and commercial calls.
- Access to the Internet in Ethiopia is the lowest in the world about 7 times behind the African average. There are about a half a million Internet users and around thirty thousand Internet subscribers. Those who connect to the Internet rely on cyber cafés, and access at schools and work places. This suggests the importance of increased competition and enhanced public access to the Internet at cyber café, schools and work places.
- The social and economic challenges facing Ethiopia, particularly the recent rise of prices of goods have had a direct impact on the ability of users to pay for communication services. Both fixed line and mobile expenditure are the lowest in Africa. This implies the need for revision of communication tariffs.
- About a third of the communication users in Ethiopia indicated that they would spend the savings on other purposes, if the rates were to come down. This shows that high communications costs are competing with their other priorities such as costs of food or school fees. Downward revision of communication tariffs would create incentives for about two-thirds of the users to spend their savings on communication services and a third to spend their savings on other urgent needs. In addition, there is a need for the introduction of innovative pro-poor pricing schemes including fixed and mobile pre-paid services featuring less than a dollar air time cards, elimination of one month air time window and the introduction of online transfer of airtime and mobile banking.

10. Policy Recommendations

There has been a significant improvement of communication services in Ethiopia from its lower base; yet all indices indicate that the country is far behind its neighbors and other nations in terms of access to all ICTs. In addition, there is a significant dissatisfaction with the current services. The public monopoly over all communication-related services has made the incumbent increasingly less efficient and effective and the quality of service has fallen considerably over the last two years, resulting in limited network connection, lower call completion rates and deteriorating customer care.

The regulator has not been effective in monitoring the quality of service and sanctioning the incumbent operator. It is important that the regulator establishes quality of service benchmarks and make the incumbent accountable for those quality standards. There is a need for building the capacity of the regulator in defining quality benchmarks, auditing QoS reports that are submitted by the incumbent; applying appropriate sanction when the incumbent fails to meet those standards. It is important to put consumer protection frameworks in place including compliant registration and resolution procedures.

The low level of penetration of Internet and mobile services cannot be improved without the introduction of competition in those segments, if not in fixed line communication. The government' response to bridge the communications gap has been the introduction of massive infrastructure rollout through vendor financing scheme and retention of public monopoly. Public monopoly stifles social and economic opportunities of individuals, enterprises and institutions; and its cost to national development is very high. There is also strong counter argument against vendor financing scheme; hunches from Asia indicate that the long term economic and social cost may be dramatic.

The government needs to consider a combination of vendor financing with the gradual introduction of competition in the Internet, mobile and fixed line segments. This would:

- Enable the incumbent to retain control over key public infrastructure and focus on whole sale of broadband services
- Reduce government's reliance on vendors for building the infrastructure,
- promote innovation, quality of service and standards;
- Assist in building the capacity of the private sector, particularly the Ethiopian high-tech communications businesses that could compete at regional and global levels,
- Allow for the regulator to gain valuable experience that would prepare it to assume a key regulatory role when the market is fully open to competition.
- Promote value and choice for consumers particularly for those suffering from the low quality and high cost of services

The findings of the ICT access and usage survey underscore the need for a review communication tariffs to improve access to those at the bottom of the pyramid. At the same time there is a need for improving the service levels and introduction of innovative revenue generation schemes to offset the reduction in communication tariff to increase the revenue of the operator.

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